

007/2022

Question Booklet
Alpha Code

A

Question Booklet
Serial Number

Total Number of Questions : 100

Time : 75 Minutes

Maximum Marks : 100

INSTRUCTIONS TO CANDIDATES

1. The question paper will be given in the form of a Question Booklet. There will be four versions of question booklets with question booklet alpha code viz. **A, B, C & D**.
2. The Question Booklet Alpha Code will be printed on the top left margin of the facing sheet of the question booklet.
3. The Question Booklet Alpha Code allotted to you will be noted in your seating position in the Examination Hall.
4. If you get a question booklet where the alpha code does not match to the allotted alpha code in the seating position, please draw the attention of the Invigilator **IMMEDIATELY**.
5. The Question Booklet Serial Number is printed on the top right margin of the facing sheet. If your question booklet is un-numbered, please get it replaced by new question booklet with same alpha code.
6. The question booklet will be sealed at the middle of the right margin. Candidate should not open the question booklet, until the indication is given to start answering.
7. Immediately after the commencement of the examination, the candidate should check that the question booklet supplied to him contains all the 100 questions in serial order. The question booklet does not have unprinted or torn or missing pages and if so he/she should bring it to the notice of the Invigilator and get it replaced by a complete booklet with same alpha code. This is most important.
8. A blank sheet of paper is attached to the question booklet. This may be used for rough work.
9. **Please read carefully all the instructions on the reverse of the Answer Sheet before marking your answers.**
10. Each question is provided with four choices **(A), (B), (C)** and **(D)** having one correct answer. Choose the correct answer and darken the bubble corresponding to the question number using Blue or Black Ball-Point Pen in the OMR Answer Sheet.
11. **Each correct answer carries 1 mark and for each wrong answer 1/3 mark will be deducted. No negative mark for unattended questions.**
12. No candidate will be allowed to leave the examination hall till the end of the session and without handing over his/her Answer Sheet to the Invigilator. Candidates should ensure that the Invigilator has verified all the entries in the Register Number Coding Sheet and that the Invigilator has affixed his/her signature in the space provided.
13. Strict compliance of instructions is essential. Any malpractice or attempt to commit any kind of malpractice in the Examination will result in the disqualification of the candidate.

007/2022

1. In a case of Acute Lymphoblastic Leukemia, the lymphoblasts demonstrated strong localized positivity with acid phosphatase.
The cells were positive for CD2 and CD7 and negative for CD19, CD24, and CD20.
These blasts are most likely :
(A) Lymphoid stem cells (B) T lymphoblasts
(C) B lymphoblasts (D) Undifferentiated blasts

2. A patient with anemia of chronic disease is most likely to have which set of laboratory test results ?
(A) MCV decreased, serum iron decreased, serum ferritin decreased, TIBC and % saturation decreased
(B) MCV normal, serum iron increased, serum ferritin decreased, TIBC and % saturation decreased
(C) MCV normal, serum iron decreased, serum ferritin increased, TIBC and % saturation decreased
(D) MCV decreased, serum iron increased, serum ferritin increased, TIBC and % saturation increased

3. An increase in the reticulocyte count is accompanied by :
(A) Suppressed maturation of normoblasts in the bone marrow
(B) A shift to the left in the oxygen dissociation curve
(C) Polychromasia on the Romanovsky stained blood smear
(D) An increase in direct serum bilirubin

4. A 8-year-old boy presents with intramuscular hematomas and recurrent hemarthroses. Laboratory tests reveal normal platelet count bleeding time, and PT, but the PTT is prolonged. This condition most likely results from an abnormality involving :
(A) Chromosome 8 (B) Chromosome 14
(C) Chromosome 21 (D) X Chromosome

5. A patient is suspected of having hemolytic anemia. Numerous spherocytes are present in the blood smear, and the reticulocyte count is 18%. What test should be done to determine whether this is an autoimmune process ?
(A) Direct Antiglobulin Test (DAT) (B) Osmotic Fragility Test
(C) Urinalysis (D) Serum Bilirubin

6. A joint aspiration is performed on a 60 year old lady with painful swollen elbow, and a sample is sent to the laboratory. A cytocentrifuged slide is examined with polarized light shows needlelike intracellular and extracellular crystals which exhibit negative birefringence compensator. These crystals would be best identified as which of the following ?
(A) Calcium pyrophosphate (B) Cholesterol
(C) Monosodium urate (D) Steroids

A

3

{P.T.O.}

7. A thoracentesis is performed on a large pleural effusion yielded 1.2 L of thick, yellow fluid. Laboratory studies show a total protein of 4.5 g/dL (serum=6 g/dL) lactate dehydrogenase 40 U/L (serum = 50 u/L) and total leukocyte count of 20,000/microlitre with 90% segmented neutrophils. Which statement fits most well for this fluid ?
- (A) This is an exudate
 (B) This is a transudate
 (C) This is a chylous fluid
 (D) This is unlikely to be of an infectious etiology
8. Hematuria with dysmorphic RBCs is a hallmark of :
- (A) Renal Tuberculosis (B) Acute Glomerulonephritis
 (C) Chronic Renal Failure (D) Renal Calculi
9. Microalbuminuria is defined as level of albumin in urine at range of :
- (A) 100-150 mg/day (B) 150-200 mg/day
 (C) 30-300 mg/day (D) 300-600 mg/day
10. A 51-year-old man is admitted following an episode of hematemesis in which he remembers vomiting about a liter of dark red bloody vomitus into the. He is found to have orthostatic hypotension. His Hgb is 6.2 g/dL, Hct 18.8%, MCV 74 fL, platelet count 90,000/uL, and WBC count 10,100/uL. His prothrombin time is 12.1 seconds and partial thromboplastin time 26.2 seconds. Which of the following blood products is most appropriate for this man ?
- (A) Whole blood (B) Cryoprecipitate
 (C) Fresh frozen plasma (D) Packed RBC's
11. A recipient developed a sudden drop in blood pressure following transfusion, though he remained afebrile. Which of the following conditions is most likely to be found ?
- (A) Septicemia (B) Graft-versus-host disease
 (C) Penicillin allergy (D) IgA deficiency
12. One unit of FRESH FROZEN PLASMA prepared from whole blood contains _____ ml of plasma.
- (A) 100-150 (B) 250-400 (C) 200-250 (D) 50-150
13. Coombs control cell consists of :
- (A) Type O positive cells coated with Anti D
 (B) Type O negative cells coated with Anti D
 (C) Type A positive cells coated with Anti D
 (D) Type A negative cells coated with Anti D

14. Nucleic acid Amplification Test for HIV was instituted in donor testing protocols to :
- (A) Identify donors with late stage HIV who lack antibodies
 (B) Confirm the presence of anti HIV in asymptomatic HIV INFECTED DONORS
 (C) Reduce window period to detect virus earlier than other available tests
 (D) Detect antibodies to specific viral proteins including p24
15. Gauge of needle ideal for blood transfusion generally is :
- (A) 21 G (B) 25 G (C) 16 G (D) 10 G
16. Which of the following is an example of Iron Hematoxylin ?
- (A) Mayers Hematoxylin (B) Harris's Hematoxylin
 (C) Weigerts Hematoxylin (D) Gills Hematoxylin
17. Which of the following microtome is better for cutting large specimens for museum ?
- (A) Rotary microtome (B) Rocking microtome
 (C) Sledge microtome (D) Sliding microtome
18. Which of the following is a routinely used clearing agent in histopathology ?
- (A) Chloroform (B) Xylene (C) Benzene (D) Cedarwood oil
19. Which of the following is **not** a slide adhesive ?
- (A) DPX (B) Mayer's egg albumin
 (C) Chrome alum-gelatin (D) APES
20. Which of the following is **not** an aqueous mounting media ?
- (A) Glycerine jelly (B) Apathy's media
 (C) Fructose syrup (D) Canada balsam
21. Which among the following is the best stain for demonstration of Barr Body ?
- (A) Papanicolaou stain (B) Orcein stain
 (C) Hematoxylin & Eosin stain (D) Shorr stain
22. Which of the following EA (Eosin Azure) is preferred for non-gynaecological smears ?
- (A) EA 50 (B) EA 36 (C) EA 65 (D) EA 25
23. Which of the following fixative is **not** useful in a Millipore Filter (membrane filter) ?
- (A) 95% Ethyl alcohol (B) 80% Isopropyl alcohol
 (C) 100% Methanol (D) 80% Propanol
24. Which among the following is the most suitable fixative for gastric washings ?
- (A) 50% Ethanol (B) 70% Ethanol
 (C) 95% Ethanol (D) None of the above

25. Carnoy's fixative do not contain _____.
- (A) 95% Ethanol (B) Glacial acetic acid
(C) Chloroform (D) Formaldehyde
26. Tissue of choice for routine karyotyping :
- (A) Blood (B) Bone marrow (C) Skin (D) Amniotic fluid
27. Anticoagulant of choice for chromosome analysis like Karyotyping :
- (A) EDTA (B) Heparin
(C) Sodium Citrate (D) None of the above
28. Which type of chromosome abnormality is characteristically seen in Philadelphia chromosome ?
- (A) Inversion (B) Deletion
(C) Translocation (D) None of the above
29. Which is the standard/Routine banding technique used in chromosome studies ?
- (A) C-Banding (B) R-Banding (C) Q-Banding (D) G-Banding
30. Which of the following techniques can be used in diagnosing haematological malignancy ?
- (A) Flow cytometry (B) Karyotypic analysis
(C) PCR-based assays (D) All the above
31. Sterilisation techniques are first developed by :
- (A) Paul Ehrlich (B) Edward Jenner
(C) Robert Koch (D) Louis Pasteur
32. The microscope which is used to visualize organisms which are live and unstained :
- (A) Light microscope (B) Dark field microscope
(C) Fluorescent microscope (D) Scanning electron microscope
33. Holding period of Laboratory Autoclave :
- (A) 160° for 1 hour (B) 100° for 20 minutes
(C) 121° for 15 minutes, 15 lbs (D) 85° for 30 minutes
34. Which of the following statement is **false** about receiving clinical specimens in laboratory ?
- (A) Laboratory staff should be in gown and glove
(B) Laboratory staff should check whether samples are received in leak proof container
(C) Unlabelled specimens and wrongly labelled specimens can be accepted
(D) If sample is not sufficient for processing, the staff can ask for a repeat sample

35. Which statement is false regarding ionising radiation ?
(A) It has got a low penetrating power
(B) It is termed as cold sterilisation
(C) X-rays and gamma rays are lethal to DNAs
(D) Used for sterilising plastic items, syringes and catheters
36. All of the following tests are used for detecting efficacy of disinfectants except :
(A) Chick Martin test (B) In-use test
(C) Kelsey-sykes test (D) Serenys test
37. Isospora belong to which Sub-phylum ?
(A) Sub-phylum Sporozoa (B) Sub-phylum Microspora
(C) Sub-phylum Ciliophora (D) Sub-phylum Sarcomastigophora
38. All the following helminthic eggs are **not** bile stained except :
(A) Ancylostoma duodenale (B) Enterobius vermicularis
(C) Ascaris lumbricoides (D) Necator americanus
39. NIH swabs are used for collecting specimens in suspected cases of :
(A) Trichuriasis (B) Ancylostomiasis
(C) Ascariasis (D) Enterobiasis
40. Cryptosporidia oocysts are better stained and visualized by :
(A) Leishman stain (B) Modified acid fast staining
(C) Ponder's stain (D) H and E stain
41. Which of the following is included in the laboratory diagnosis of Filariasis ?
(A) Demonstration of microfilaria in peripheral blood of patients
(B) Serological methods
(C) Imaging methods and molecular methods
(D) All of the above
42. The major complication of Falciparum malaria :
(A) Black water fever (B) Cerebral malaria
(C) Algid malaria (D) All of the above
43. Which of the following statement about bacterial capsule is **incorrect** ?
(A) *Streptococcus pneumoniae* has polysaccharide capsule
(B) Protects bacteria by inhibiting phagocytosis
(C) Can be demonstrated by negative staining in wet films by India ink method
(D) Helps in bacterial motility

44. Which is the surrogate marker for detection of methicillin resistance mediated by *mec A* gene in *Staphylococcus Aureus* by disc diffusion method ?
 (A) Cefpodoxime (B) Cefoxitin (C) Optochin (D) Bacitracin
45. All are correct about autoclave except :
 (A) Used to sterilize surgical instruments in hospital
 (B) Sterilizing conditions commonly used are temperature exposure of 121°C for 15 min at 15 pounds pressure
 (C) Spores of *Bacillus Atrophaeus* is used as sterilization control
 (D) Gravity displacement type is commonly used in laboratories
46. Which of the following is a selective medium for *Salmonella Typhi* ?
 (A) Xylose lysine deoxycholate agar (B) Alkaline bile salt agar
 (C) Mannitol salt agar (D) Thayer Martin medium
47. Which is **not correct** regarding oxidase test ?
 (A) Used to identify bacteria which produce the enzyme cytochrome oxidase
 (B) The test is performed on bacterial colonies from MacConkey's agar
 (C) Positive test is shown by purple color developing within 10 seconds
 (D) Reagent used is 1% tetra-methyl-p-phenylenediamine dihydrochloride
48. Which of the following can be used to stain metachromatic granules of *Corynebacterium diphtheriae* ?
 (A) Albert's stain (B) Neisser's stain
 (C) Loeffler's methylene blue (D) All of the above
49. Which of the following cannot be cultivated in artificial culture media ?
 (A) *Cryptococcus neoformans* (B) *Rhinosporidium seebri*
 (C) *Blastomyces dermatitidis* (D) *Sporothrix schenckii*
50. All are true about Sabouraud's dextrose agar except :
 (A) pH of the medium is 8.6
 (B) Growth of saprophytic fungi is prevented by adding cycloheximide
 (C) Constituents are peptone, dextrose and agar
 (D) Used for the isolation of pathogenic and non-pathogenic fungi
51. Which of the following is/are **true** of dimorphic fungi ?
 (A) Occurs as yeast form in tissues at 37°C
 (B) Occurs as mycelial form in cultures at 25°C
 (C) *Sporothrix schenckii* is a dimorphic fungus
 (D) All of the above

52. *Candida albicans* shows the following characteristics except :
- (A) Is a true yeast
 - (B) Demonstration of pseudohyphal forms in tissue indicates invasion
 - (C) Rapid identification is by its ability to form germ tubes at 37°C in 2 hrs
 - (D) Oral thrush is a form of mucosal candidiasis
53. Which of the following fungi causing human disease is **not** a common laboratory contaminant ?
- (A) *Penicillium spp*
 - (B) *Cryptococcus spp*
 - (C) *Aspergillus spp*
 - (D) *Mucor spp*
54. Which of the following statement regarding dermatophytes is **not correct** ?
- (A) Are hyaline filamentous fungi
 - (B) Infect keratinised tissues
 - (C) Sensitive to cycloheximide
 - (D) Infect skin, hair and nails
55. An example of continuous cell line for virus isolation is :
- (A) Human carcinoma of cervix cell line
 - (B) Human amnion cell culture
 - (C) Human embryonic lung cell strain
 - (D) Rhesus embryo cell strain
56. In a patient with chronic hepatitis B virus infection which serological marker indicates high infectivity ?
- (A) Hepatitis B surface antigen
 - (B) Hepatitis B (Precore) antigen
 - (C) Hepatitis B surface antibody
 - (D) Hepatitis B core antibody
57. All of the following are true of viral inclusion bodies except :
- (A) They are aggregates of viruses inside an infected cell
 - (B) They are situated only in the cytoplasm of infected cells
 - (C) Giemsa stain is used to demonstrate inclusion bodies
 - (D) Negri bodies are inclusion bodies seen in brain tissue in rabies virus infection
58. Which of the following is **not correct** regarding biosafety cabinets ?
- (A) Biosafety cabinets are of 2 classes
 - (B) They provide a barrier between the lab personnel and infective material during processing
 - (C) Procedures like mixing or ultrasonic disruption of specimens of pathogens that generate aerosols is done in class I biosafety cabinet
 - (D) Uninoculated cell cultures for virus isolation are processed in class II biosafety cabinet

59. Which of the following statements regarding prions is **incorrect** ?
- (A) Infectious proteinaceous agents which do not have nucleic acid
 - (B) They can be inactivated by boiling at 100°C
 - (C) Kuru is human disease caused by prions
 - (D) Instruments contaminated with prion containing materials can be disinfected with 1N sodium hydroxide
60. All of the following are true of NIPAH virus except :
- (A) Fruit bats of the Pteropodidae Family are its natural host
 - (B) It is an enveloped RNA virus and belongs to Paramyxoviridae family
 - (C) It is a Biosafety level 2 pathogen
 - (D) Diagnosis in the early phase of infection is by real time PCR of throat specimens
61. Among the following methods, identify the **correct** way of cleaning laboratory glassware.
- (A) Soap water → Tap water → Paper towel drying
 - (B) Soap water → Tap water → Air drying
 - (C) Soap water → Tap water → Acetone wash → Air drying
 - (D) Soap water → Tap water → Deionized water → Air drying
62. Identify the factor that is **not** a contributor in loss of pipetting accuracy.
- (A) Temperature of fluid to be pipetted.
 - (B) Viscosity of fluid to be pipetted.
 - (C) Fluid volume 50% above minimum volume.
 - (D) Angle of pipette during aspiration.
63. Out of the listed safety protocols, identify the protocol **not** adhering to proper laboratory safety standard.
- (A) Splash goggles should always be worn inside the laboratory.
 - (B) Procedures resulting in hazardous fumes should be performed in a fume hood.
 - (C) Material safety data sheet (MSDS) of all chemicals used must be displayed in the laboratory.
 - (D) Used needles and blades should be safely disposed by wrapping in paper towels.
64. In a chemical laboratory, identify the protocol **not** adhering to proper chemical storage standards.
- (A) Methanol should be stored in a flame safety cabinet.
 - (B) Oxidizers and flammables should be stored in same cabinet for easy access.
 - (C) Chemicals should not be stored purely based on alphabetic order.
 - (D) Acids and bases should be stored separately or with sufficient distance.
65. Highest purity of water is indicated by which conductivity ?
- (A) 18.2 MΩ cm⁻¹ (B) 15.0 MΩ cm⁻¹ (C) 17.2 MΩ cm⁻¹ (D) 12 MΩ cm⁻¹

66. Identify the SI unit of temperature.
(A) Fahrenheit (B) Celsius (C) Kelvin (D) All of these
67. Molarity is defined as _____ of a substance _____ one litre of distilled water.
(A) Molecular weight, Dissolved in
(B) Equivalent weight, Dissolved and made upto
(C) Gram molecular weight, Dissolved in
(D) Gram molecular weight, Dissolved and made upto
68. Safe disposal of biological specimen should be ensured by which of the following ?
(A) Specimen is disposed by burning in open air.
(B) Specimen should be placed in an autoclave bag and autoclaved for 1 hour.
(C) Specimen is washed down the sink with any disinfectant solution.
(D) Specimen is to be stored in sealed bag till it is safe for disposal.
69. Identify the most appropriate anticoagulant for use in blood banking.
(A) Citrate Phosphate Dextrose/Acid Citrate Dextrose
(B) Ethylene Diamine Tetraacetic Acid (EDTA)
(C) Heparin Sulphate
(D) Trisodium Citrate
70. Urine specimen preservation is achieved with which of these chemicals ?
(A) Sodium molybdate (B) Potassium isocitrate
(C) Heparin+EDTA (D) Boric acid
71. Flame photometer is based on characteristic emission by metals when _____.
(A) Excited by electron beams.
(B) Given sufficient energy in the form of heat.
(C) Rapidly heated and cooled.
(D) Introduced in a strong magnetic field produced by a hot electrode.
72. Radioactive emission of a liquid specimen can be accurately quantified by which of the following methods ?
(A) Geiger muller counter (B) Thermoluminous badges
(C) Autoradiography film (D) Scintillation counter
73. From the buffer systems listed below, identify the buffer most important in maintaining blood pH.
(A) Carbonic acid-bicarbonate buffer
(B) Haemoglobin buffer
(C) Phosphate buffer
(D) Ammonium buffer

74. Tyndall effect is displayed by _____ when a beam of light is passed through it.
(A) Buffers (B) Colloids
(C) Suspensions (D) Saturated salt solutions
75. In column chromatography, isocratic elution refers to :
(A) Solvent system under high pressure
(B) Solvent system with varying polarity
(C) Solvent system with negative pressure
(D) Solvent system with constant polarity
76. Separation of amino acids by Silica gel thin layer chromatography is based on :
(A) Molecular size of amino acids
(B) Interaction of amino group of amino acids with stationary phase
(C) Interaction of R-group of amino acids with stationary phase
(D) Molecular charge of individual amino acids
77. Among the following, identify a protocol **not** complying with good practices in a clinical biochemistry laboratory.
(A) Protocols can be amended by the personnel at their discretion.
(B) A record of all approved protocols must be maintained in the laboratory.
(C) A record of the qualification of all personnel involved in the laboratory is maintained.
(D) Periodic auditing of the facility must be carried out.
78. What is **not** an advantage of an autoanalyzer in a clinical laboratory ?
(A) More accurate than manual methods.
(B) Higher sample turnover.
(C) Versatility in handling multiple assays simultaneously.
(D) None of these.
79. Identify the main benefit of adopting laboratory informatics in a clinical laboratory.
(A) Job creation for information technologists.
(B) Makes daily laboratory management less user friendly.
(C) Databases help in result recording, retrieval, and analysis.
(D) Open to data manipulation.
80. Analytical variables can arise from which of the following factors ?
(A) Relaxed quality control of equipments involved.
(B) Poor standard operating procedures.
(C) Lack of rigorous controls in sample collection.
(D) All of these.

92. Regarding urinary 5-HIAA which among the following is **true** ?
 (A) Acidic urine preservatives should be used
 (B) Spot urine sample cannot be used
 (C) NaOH should be added to urine before storing
 (D) The values are not affected by diet
93. Regarding CSF glucose which is **correct** ?
 (A) Normal CSF glucose is 60-70% of blood glucose
 (B) CSF glucose is measured to assess diabetes mellitus
 (C) CSF/Blood glucose ratio is decreased in hemochromatosis
 (D) Plasma sample for glucose estimation should be taken at the same as lumbar puncture
94. In pentagastrin test, high acid secretion is observed in :
 (A) Pernicious anemia (B) ZE syndrome
 (C) Cancer of stomach (D) Gastric atrophy
95. Staghorn urinary calculus is formed by :
 (A) Phosphate stones (B) Cysteine stones
 (C) Uric acid stones (D) Oxalate stones
96. In SDS PAGE electrophoresis :
 (A) The proteins move towards anode
 (B) The proteins move towards cathode
 (C) Even multimeric proteins produce single sharp band
 (D) pH of buffer is 6.8
97. In which type of ELISA is the absorbance inversely related with antigen concentration ?
 (A) Direct ELISA (B) Indirect ELISA
 (C) Competitive ELISA (D) Sandwich ELISA
98. The immunoglobulin increased in secondary response is :
 (A) IgM (B) IgG (C) IgA (D) IgE
99. The cardiac biomarker that can be used to diagnose heart failure :
 (A) CKMB (B) Total CK (C) BNP (D) LDH
100. The confirmatory method for identification of drugs of abuse is :
 (A) ELISA (B) Gas chromatography/mass spectrometry
 (C) Nephelometry (D) Ion selective electrode

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SPACE FOR ROUGH WORK

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